National Institute of Environmental Health Sciences

Drivers, dynamics, and control of emerging vector-borne zoonotic diseases

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Abstract:

Emerging vector-borne diseases are an important issue in global health. Many vector-borne pathogens have appeared in new regions in the past two decades, while many endemic diseases have increased in incidence. Although introductions and emergence of endemic pathogens are often considered to be distinct processes, many endemic pathogens are actually spreading at a local scale coincident with habitat change. We draw attention to key differences between dynamics and disease burden that result from increased pathogen transmission after habitat change and after introduction into new regions. Local emergence is commonly driven by changes in human factors as much as by enhanced enzootic cycles, whereas pathogen invasion results from anthropogenic trade and travel where and when conditions (eg, hosts, vectors, and climate) are suitable for a pathogen. Once a pathogen is established, ecological factors related to vector characteristics can shape the evolutionary selective pressure and result in increased use of people as transmission hosts. We describe challenges inherent in the control of vector-borne zoonotic diseases and some emerging non-traditional strategies that could be effective in the long term.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3739480

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Human Conflict/Displacement, Temperature

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Global or Unspecified

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: General Vectorborne, Mosquito-borne Disease, Tick-borne Disease

Mosquito-borne Disease: General Mosquito-borne Disease

Tick-borne Disease: General Tick-borne Disease

Resource Type:

format or standard characteristic of resource

Review

Timescale:

time period studied

Time Scale Unspecified